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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/691,930 | 10/22/2003 | W. Daniel Hillis | APPL0001C | 1609 |

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| EXAMINER | |
|---|---|
| RAMAKRISHNAIAH, MELUR | |
| **ART UNIT** | **PAPER NUMBER** |
| 2643 | |

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/691,930 | HILLIS ET AL. | |
| | Examiner | Art Unit | |
| | Melur Ramakrishnaiah | 2643 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C 102(e) as being anticipated by Fong et al. (US PAT: 6,208,373, hereinafter Fong).

Regarding claim 1, Fong discloses an apparatus for presenting a composite image conveying eye contact with a conference participant, comprising: a composite image generator (301, fig. 3) communicatively coupled with at least two members of an imaging device collection (for example a-b, c-d, fig. 3), for respectively receiving an image from each image device in the collection at approximately a same time to provide a synchronized image based on observations of the participants by at least two members of the imaging device collection, the image generator including means for determining a rectifying transformation associated with each of the imaging device collection members (201a-201d, figs. 2-3, col. 8 lines 27-55; (col. 2, line 49 – col. 3, line 5; col. 3, line 66 – col. 4, line 10), wherein the composite image generator is communicatively coupled to a motion video portal in (301, fig. 3) for providing a succession of the composite images based upon at least the synchronized image collection for presentation to a video delivery system (303, fig. 3), wherein video delivery

system presents a second participant with a motion video stream based upon the composite image succession (figs. 2-3, col. 6 lines 62-67, col. 7, line 1 – col. 8, line 55).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 –7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fong in view of Shashua et al. (US PAT: 6,219,444, filed 2-2-1998, hereinafter Shashua).

Regarding claim 2, Fong discloses an apparatus that conveys eye contact with a conference participant, comprising: means (301, fig. 3) fort generating composite image of the participant receiving at least two images of the participant, wherein each image is comprised of two-dimensional array of pixels, means for generating composite image (col. 2 lines 61-67, col. 8 lines 34-55).

Fong differs from claimed invention in that although he teaches generating eye contact image by receiving images from multiple cameras and using field graph to create an image which provides eye contact between the conference participants (col. 7 lines 52-66, col. 8 lines 47-51); he does not teach the following: means for calculating at least one dense correspondence to determine a displacement in at least a first dimension for each of the pixels in at least one of the first images, and means for

generating an interpolated image based upon the at least one dense correspondence for each of the at least two images.

However, Shashua discloses synthesizing virtual two dimensional images of three dimensional space from a collection of two dimensional images which teaches the following: means for calculating at least one dense correspondence to determine a displacement in at least a first dimension for each of the pixels in at least one of the first images, and means for generating an interpolated image based upon the at least one dense correspondence for each of the at least two images (fig. 2A col. 5 lines 14-38, col. 6 lines 42- col. 7, line 10 ).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Fong's system to provide for the following: means for calculating at least one dense correspondence to determine a displacement in at least a first dimension for each of the pixels in at least one of the first images, and means for generating an interpolated image based upon the at least one dense correspondence for each of the at least two images as this arrangement would provide one way, among many possible ways, of processing image to obtain eye contact of the participants in video conference.

Regarding claims 4-6, Fong implicitly teaches the following: means for displacing each of the pixels in the image pixel arrays by a partial displacement in at least in a first dimension, means (302, fig. 3) for combining corresponding pixels in the at least a second dimension to create the composite image pixel, wherein some of the partial

displacements of the images is approximately equal to the displacement, means (302, fig. 3) for applying a rectifying transformation to the image (col. 8 lines 47-55).

Regarding claims 3 and 7, Fong does not teach the following: means for combining at least two of the interpolated images by using an averaging scheme to create the composite image, means for wrapping the image by the partial displacement to modify the image.

However, Shashua teaches the following: means for combining at least two of the interpolated images by using an averaging scheme to create the composite image, means for wrapping the image by the partial displacement to modify the image (col. 5 lines 56-62).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Fong's system to provide for the following: means for combining at least two of the interpolated images by using an averaging scheme to create the composite image, means for wrapping the image by the partial displacement to modify the image as this arrangement would facilitate necessary processing to obtain the desired image as taught by Shashua.

***Response to Arguments***

5. Applicant's arguments filed on 11-3-2005 have been fully considered but they are not persuasive.

Rejection of claim 1 under 35 U.S.C 102(e) as being anticipated by Fong et al. (US PAT: 6,208,373, hereinafter Fong): regarding rejection of claim 1 using Fong reference, Applicant argues that "Beyond saying that the data stream from the cameras

is somehow combined, there is no teaching in Fong that the software application determines a "rectifying transformation associated with each of the imaging device collection members". In fact, Fong doesn't even suggest the subject matter in question. There is no ... any type of processing or correction at all prior to being combined to form Fong's virtual image". Notwithstanding applicant's contrary arguments of Fong, Fong teaches the following: processing system which accepts images from plural cameras and process images to create an virtual image. This means software in Fong's system does processing on received images from plural cameras to create virtual image as if picture is created from a virtual video camera positioned within the area of the display screen (col. 2, line 49 – col. 3, line 5; col. 3, line 66 – col. 4, line 10). This clearly reads on applicant's limitation of "rectifying transformation associated with each of the imaging device collection members" because as explained above, Fong teaches a method of correcting a lost look in a video conferencing system comprising steps of (a) capturing images of conferencing participant by two or more video cameras positioned outside a display, and (b) feeding a video stream from two or more video cameras to a processor, and (c) creating a single video stream from two or more streams and stored variables and constants, and using a field graph algorithm, the single video stream presenting the conference participant as though captured from a virtual camera placed within the monitor system (col. 3, line 66 – col. 4, line 10).

Rejection of claims 2-7 under 35 U.S.C 103(a) as being obvious over Fong in view of Shashua et al. (US PAT: 6,219,444, filed 2-2-1998, hereinafter Shashua): regarding rejection of claim 2 using the above reference, Applicant argues that

"Shashua does not describe computing two interpolated images as in claim 2". Regarding this, claim 2 recites a limitation such as means for generating an interpolated image based upon at least one dense correspondence for each of the said at least two images. Claim 2 calls for generating an interpolated image not computing two interpolated images as alleged by the applicant in his arguments. Shashua clearly teaches the limitation such as means for calculating at least one dense correspondence to determine a displacement in at least a first dimension for each of the pixels in at least one of the first images, and means for generating an interpolated image based upon the at least one dense correspondence for each of the at least two images (fig. 2A col. 5 lines 14-38, col. 6 lines 42- col. 7, line 10).

Applicant regarding rejection of claim 2 under 103(a) using the combination of Fong and Shashua, further argues that " Even if combination taught all features of the claimed invention, it would be improper because the examiner has not identified a proper motivation to combine the references. Defining the problem in terms of the solution reveals improper hindsight in the selection of the prior art relevant to obviousness". In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Regarding rejection claims dependent claims 3-7, Applicant arguments are tied to independent claim 2 being patentable which is not as explained above.

In light of the above explanation, rejection of claims 1-7 is maintained.

**6. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melur Ramakrishnaiah whose telephone number is (571)272-8098. The examiner can normally be reached on 9 Hr schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melur Ramakrishnaiah
Primary Examiner
Art Unit 2643